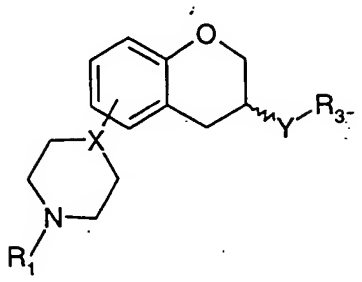
CLAIMS

1. A compound having the formula (I)



(I)

wherein

X is N or CH;

Y is NR_2CH_2, CH_2NR_2, NR_2CO, $CONR_2$, NR_2SO_2 or NR_2CONR_2

wherein R_2 is H or C_1-C_6 alkyl;

R_1 is H, C_1-C_6 alkyl or C_3-C_6 cycloalkyl;

R_3 is C_1-C_6 alkyl, C_3-C_6 cycloalkyl or $(CH_2)_n$-aryl,

wherein aryl is phenyl or a heteroaromatic ring containing one or two heteroatoms selected from N, O and S and which may be mono- or di-substituted with R_4 and/or R_5;

wherein R_4 is H, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, halogen, CN, CF_3,OH, C_1-C_6 alkoxy, NR_6R_7, OCF_3, SO_3CH_3, SO_3CF_3, $SO_2NR_6R_7$, phenyl, phenyl-C_1-C_6 alkyl, phenoxy, C_1-C_6 alkylphenyl, an optionally substituted heterocyclic ring containing one or two heteroatoms selected from N, O, S, SO and SO_2 wherein the substituent(s) is(are) selected from C_1-C_6 alkyl, C_3-C_6 cycloalkyl, phenyl-C_1-C_6 alkyl, $(CH_2)_mOR_9$ wherein m is 2-6 and R_9 is H, C_1-C_6 alkyl, C_3-C_6 cycloalkyl or phenyl-C_1-C_6 alkyl , and COR_8, an optionally substituted heteroaromatic ring containing one or two heteroatoms selected from N, O and S wherein the substituent(s) is(are) selected from C_1-C_6 alkyl, C_3-C_6 cycloalkyl and phenyl-C_1-C_6 alkyl, or COR_8;

wherein R_6 is H, C_1-C_6 alkyl or C_3-C_6 cycloalkyl;

R_7 is H, C_1-C_6 alkyl or C_3-C_6 cycloalkyl; and

R_8 is C_1-C_6 alkyl, C_3-C_6 cycloalkyl, CF_3, NR_6R_7, phenyl, a heteroaromatic ring containing one or two heteroatoms selected from N, O and S or a heterocyclic ring containing one or two heteroatoms selected from N, O, S, SO and SO_2;

R_5 is H, OH, CF_3, OCF_3, halogen, C_1-C_6 alkyl or C_1-C_6 alkoxy;

and n is 0-4;

as *(R)*-enantiomers, *(S)*-enantiomers or a racemate in the form of a free base or a pharmaceutically acceptable salt or solvate thereof.

2. A compound according to claim 1 wherein Y is NR_2CO or $CONR_2$.

3. A compound according to any one of claims 1-2 wherein X is N.

4. A compound according to any one of claims 1-3 wherein R_1 is H or C_1-C_6 alkyl.

5. A compound according to any one of claims 1-4 wherein R_3 is $(CH_2)_n$-aryl.

6. A compound according to any one of claims 1-4 wherein R_3 is $(CH_2)_n$-aryl which is substituted with R_4,which is an optionally substituted heterocyclic or heteroaromatic ring containing one or two heteroatoms selected from N, O and S, or COR_8.

7. A compound according to any one of claims 5 and 6 wherein n is 0

8. A compound according to claim 6 wherein R_8 is NR_6R_7 or a heterocyclic ring containing two heteroatoms selected from N and O.

9. A compound according to any one of claims 1- 8 wherein X is N and Y is NR_2CO .

10. A compound according to claim 9 wherein X is N, Y is NR_2CO and R_4 is morpholino or COR_8.

11. A compound which is
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-morpholinobenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-piperidinobenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-butoxybenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-trifluoromethylbenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-*N*,*N*-diethylaminobenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-trifluoromethoxybenzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-(4-piperidon-1-yl)benzamide;
(S)-N-[5-(4-Methylpiperazin-1-yl)-3,4-dihydro-2*H*-1-benzopyran-3-yl]-4-(hexahydro-1,4-diazepin-5-on-1-yl)benzamide, or
(*S*)-*N*-[5-(4-Methylpiperazin-1-yl)-3,4 dihydro-2*H*-1-benzopyran-3-yl]-4-(4-benzylpiperazin-1-yl)benzamide
in the form of a free base or a pharmaceutically acceptable salt or solvate thereof.

12. A pharmaceutical formulation comprising as active ingredient a therapeutically effective amount of the compound of any one of claims 1-11 as an enantiomer or racemate

in the form of a free base or a pharmaceutically acceptable salt or solvate thereof optionally in association with diluents, excipients or inert carriers.

13. A pharmaceutical formulation according to claim 12 for use in the treatment of 5-hydroxytryptamine mediated disorders.

14. A pharmaceutical formulation according to any one of claims 12 or 13 for use in the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson´s disease, thermoregulatory disorders, pain, hypertension, urinary incontinence or vasospasm; or for growth control of tumors.

15. A compound as defined in any of claims 1-11 for use in therapy.

16. A compound as defined in claim 15 for use in the treatment of disorders in the central nervous system.

17. A compound as defined in claim 16 for use in the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson´s disease, thermoregulatory disorders, pain or hypertension.

18. A compound as defined in claim 15 for use in the treatment of urinary incontinence or vasospasm or for growth control of tumors.

19. A compound as defined in claim 15 for use in the treatment of 5-hydroxytryptamine mediated disorders.

20. A compound as defined in claim 19 for use as a h5-HT_{1B} antagonist.

21. The use of a compound defined in any of claims 1-11 in the manufacture of a medicament for the treatment of disorders in the central nervous system and/or urinary incontinence or vasospasm; or for growth control of tumors.

22. The use according to claim 21 in the manufacture of a medicament for the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson´s disease, thermoregulatory disorders, pain or hypertension.

23. The use of a compound defined in any of claims 1-11 in the manufacture of a medicament for the treatment of 5-hydroxytryptamine mediated disorders.

24. The use according to claim 23 wherein the compound according to any one of claims 1-11 is used as a h5-HT_{1B} antagonist.

25. A method for the treatment of disorders in the central nervous system and/or urinary incontinence or vasospasm or for growth control of tumors by administering to a mammal including man in need of such a treatment a therapeutically effective amount of a compound defined in any of claims 1-11.

26. A method according to claim 25 for the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson´s disease, thermoregulatory disorders, pain or hypertension.

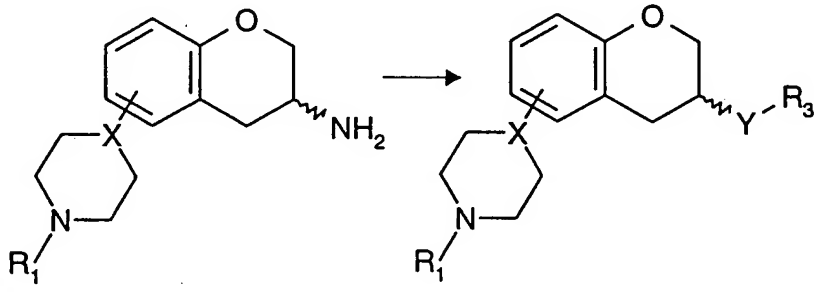
27. A method for the treatment of 5-hydroxytryptamine mediated disorder by administering to a mammal including man in need of such a treatment a therapeutically effective amount of a compound defined in any of claims 1-11.

28. A method according to claim 27 wherein the compound according to any one of claims 1-11 is used as a h5-HT_{1B} antagonist.

29 A process for the preparation of the compound of formula **I** according to claim 1 by

A(i)

acylation, in the case when R_1 is C_1-C_6 alkyl or C_3-C_6 cycloalkyl, Y is NR_2CO, R_2 is hydrogen and X and R_3 are as defined in general formula **I** in claim 1, of a compound of formula **A**,

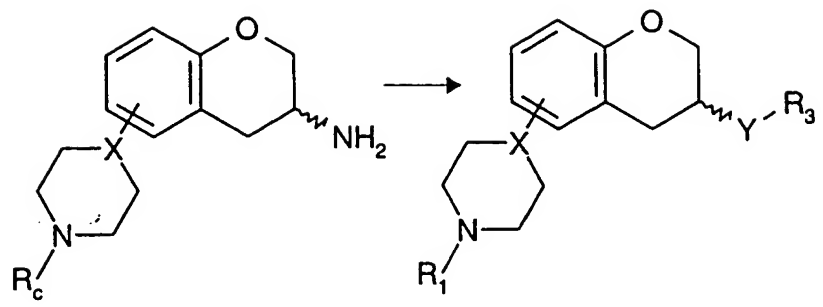


(A) (I)

with an activated carboxylic acid R_3-$COLg_1$ where Lg_1 is a leaving group or by using a carboxylic acid R_3-COOH with an activating reagent;

A(ii)

acylation, in the case when R_1 is hydrogen, Y is NR_2CO, R_2 is hydrogen, R_c is a protecting group and X and R_3 are as defined in general formula **I** in claim 1, of a compound of formula **B**

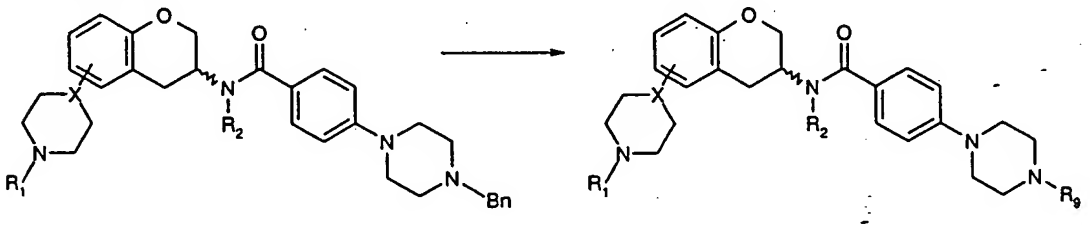


(B) (I)

with an activated carboxylic acid R_3-$COLg_1$ where Lg_1 is a leaving group or by using a carboxylic acid R_3-COOH with an activating reagent, followed by the removal of the protecting group R_c;

A(iii)

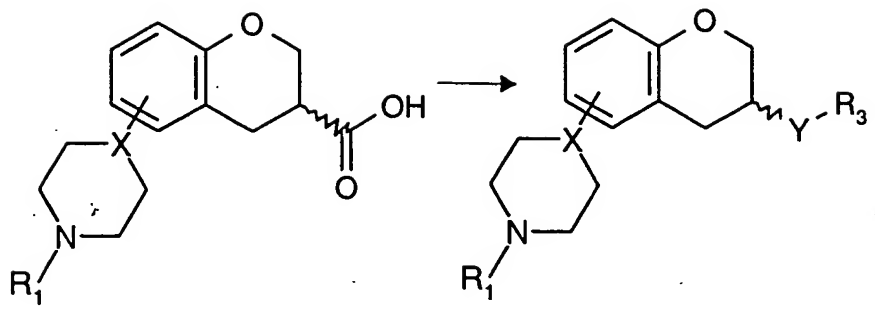
debenzylation, in the case when R_1 is C_1-C_6 alkyl or C_3-C_6 cycloalkyl, X and R_2 are as defined in general formula **I** above and R_9 below is C_1-C_6 alkyl, C_3-C_6 cycloalkyl, $(CH_2)_mOH$ wherein m is 2-6 or COR_8 , of a compound of formula **Ia,** followed by a) hydrogenation, b) alkylation, c) alkylation and removal of a protecting group or d) acylation;



(Ia) (I)

B(i)

reacting, in the case when R_1 is C_1-C_6 alkyl or C_3-C_6 cycloalkyl, Y is $CONR_2$, X, R_2 and R_3 are as defined in general formula **I** above, an activated carboxylic acid of a compound of formula **C**;

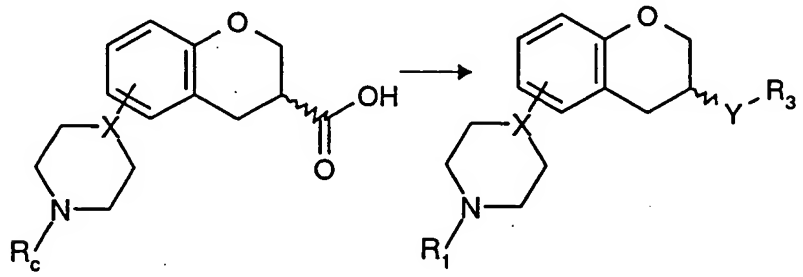


(C) (I)

with an aniline or amine HNR_2R_3; or

B(ii)

reacting, in the case when R_1 is hydrogen, Y is NR_2CO, R_c is a protecting group and X, R_2 and R_3 are as defined in general formula **I** above, an activated carboxylic acid of a compound of formula **D**

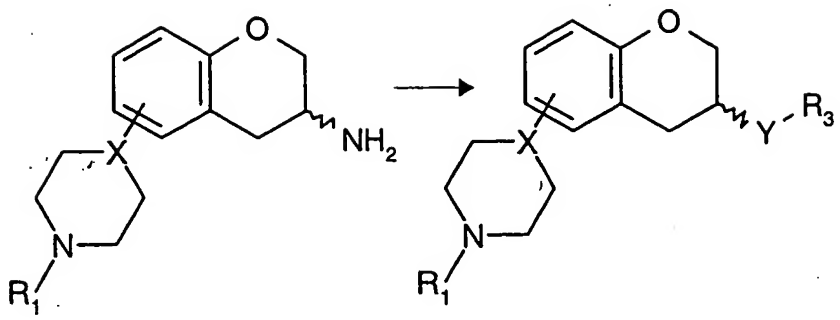


(D) (I)

with an aniline or amine HNR_2R_3, followed by removal of the protecting group R_c.

C

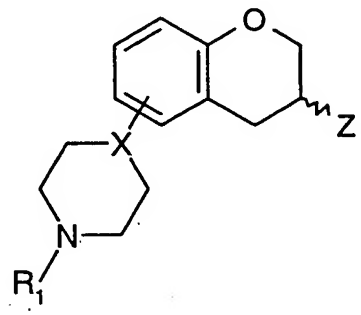
reaction, in the case when R_1 is C_1-C_6 alkyl or C_3-C_6 cycloalkyl, Y is NR_2CONR_2, R_2 is hydrogen and X and R_3 are as defined in general formula **I** above, a compound of formula **A**,



(A) (I)

with a suitable azide in the presence of carboxylic acid, R_3COOH.

30. A compound having the formula



wherein

X= N or CH;

Z= NH_2 or COOH;

R_1 is H, C_1-C_6 alkyl or C_3-C_6 cycloalkyl.